

CLAIMS

1. A recording medium for storing system stream including video elementary stream generated by encoding video information and 5 audio elementary stream generated by encoding audio information with the video elementary stream and the audio elementary stream being multiplexed, wherein

the system stream is allowed to have a first format (TS) and a second format (PS), the first format is allowed to have a 10 constrained format used for converting the system stream from the first format (TS) to the second format (PS),

according to the constrained format,

a presentation order of the video information including continuous complete data blocks starts at a top field and 15 ends at a bottom field, the continuous complete data blocks are included in continuous reference presentation time for video information and audio information, and the continuous reference presentation time includes at least one data block.

20 2. The recording medium according to claim 1, wherein the elementary stream is encoded in an encoding method which is allowed for both the first format and the second format.

25 3. The recording medium according to claim 1, wherein the video elementary stream and the audio elementary stream are multiplexed to the system stream in the same order as a presentation order in the second format (PS) that is converted according to the constrained format

30 4. The recording medium according to claim 3, wherein the

first format (TS) has a structure for storing data segmented in packets, each packet is provided with time stamp information indicating relative transfer timing, the second format (PS) has a structure for storing data segmented in packs, each pack is provided
5 with time stamp information indicating transfer timing, the pack is larger than the packet in size,

10 a predetermined number of packets are grouped and managed as a multiplexing unit, and total data size of packets managed in the multiplexing unit is not larger than data size of the pack.

15 5. The recording medium according to claim 1, wherein the system stream includes encode information that indicates whether or not the video information including continuous complete data block starts at a top field and ends at a bottom field.

20 6. The recording medium according to claim 5, wherein the encode information is included in management information for managing data stored in the recording medium as well as in the system stream.

7. An information recording apparatus for encoding video information and audio information to system stream and recording the system stream to a recording medium,

25 the system stream being allowed to have a first format (TS) and a second format (PS),

the information recording apparatus comprising:

30 a first encoding section operable to encode video information and audio information in a predetermined encoding manner according to the first format (TS) to generate video elementary

stream and audio elementary stream;

5 a second encoding section operable to perform system-encoding by multiplexing the video elementary stream and the audio elementary stream to generate the system stream according to the first format (TS); and

a control section operable to control the first encoding section and the second encoding section,

10 wherein the first format (TS) is allowed to have a constrained format used for converting the system stream from the first format (TS) to the second format (PS),

the control section controls the first and second encoding section so that each encoding is done according to the constrained format, and

15 according to the constrained format, a presentation order of the video information including continuous complete data block starts at a top field and ends at a bottom field, the continuous complete data blocks are included in continuous reference presentation time for video information and audio information, and the continuous reference presentation time includes at least one data block.

20 8. The information recording apparatus according to claim 7, wherein the control section controls the first encoding section so that the elementary stream is encoded in an encoding method which is allowed for both the first format and the second format.

25 9. The information recording apparatus according to claim 7, wherein the control section multiplexes the video elementary stream and the audio elementary stream to the system stream in the same order as a presentation order in the second format (PS) that is

converted according to the constrained format.

10. The information recording apparatus according to claim 9, wherein the first format (TS) has a structure for storing data segmented in packets, each packet is provided with time stamp information indicating relative transfer timing, the second format (PS) has a structure for storing data segmented in packs, each pack is provided with time stamp information indicating transfer timing, the pack is larger than the packet in size,

10 the control section controls the second encoding section so that a predetermined number of packets are grouped and managed as a multiplexing unit, and total data size of packets managed in the multiplexing unit is not larger than data size of the pack.

15 11. The information recording apparatus according to claim 7, wherein the system stream includes encode information that indicates whether or not the video information including continuous complete data block starts at a top field and ends at a bottom field.

20 12. The information recording apparatus according to claim 11, wherein the encode information is included in management information for managing data stored in the recording medium as well as in the system stream.

25 13. An information recording method including encoding video information and audio information to system stream and recording the system stream to a recording medium,

the system stream being allowed to have a first format (TS) and a second format (PS),

30 the first format (TS) is allowed to have a constrained

format used for converting the system stream from the first format (TS) to the second format (PS),

the information recording method comprising:

5 encoding video information and audio information in a predetermined encoding manner according to the first format (TS) to generate video elementary stream and audio elementary stream; and

10 performing system-encoding by multiplexing the video elementary stream and the audio elementary stream to generate the system stream according to the first format (TS);

15 wherein, according to the constrained format, a presentation order of the video information including continuous complete data blocks starts at a top field and ends at a bottom field, the continuous complete data blocks are included in continuous reference presentation time for video information and audio information, and the continuous reference presentation time includes at least one data block.

14. The information recording method according to claim 13, wherein the elementary stream is encoded in an encoding method which 20 is allowed for both the first format and the second format.

15. The information recording method according to claim 13, wherein the video elementary stream and the audio elementary stream are multiplexed to the system stream in the same order as a presentation order in the second format (PS) that is converted 25 according to the constrained format

16. The information recording method according to claim 15, wherein the first format (TS) has a structure for storing data 30 segmented in packets, each packet is provided with time stamp

information indicating relative transfer timing, the second format (PS) has a structure for storing data segmented in packs, each pack is provided with time stamp information indicating transfer timing, the pack is larger than the packet in size,

5 a predetermined number of packets are grouped and managed as a multiplexing unit, and total data size of packets managed in the multiplexing unit is not larger than data size of the pack.

10 17. The information recording method according to claim 13, wherein the system stream includes encode information that indicates whether or not the video information including continuous complete data block starts at a top field and ends at a bottom field.

15 18. The information recording method according to claim 17, wherein the encode information is included in management information for managing data stored in the recording medium as well as in the system stream.